

Selenoscopus turbisquamatus, a New Genus and Species of Uranoscopid Fish from Japan and the Norfolk Ridge

Osamu Okamura¹ and Hirokazu Kishimoto²

¹Department of Biology, Faculty of Science, Kochi University
2-5-1 Akebono-cho, Kochi 780, Japan

²Institute of Oceanic Research and Development, Tokai University
3-20-1 Orido, Shimizu, Shizuoka 424, Japan

Abstract A new stargazer, *Selenoscopus turbisquamatus*, is described from 30 specimens from the Kyushu-Palau Ridge, the coasts of Kii Peninsula, Japan, and the Norfolk Ridge, northern Tasman Sea. The species appears to be most closely related to the genus *Uranoscopus* in having two dorsal fins, a spinous dorsal fin consisting of feeble spines, a stout cleithral spine, an externally visible pelvic spur, two supracleithral spines, and no postcleithrum, but differs from it in having a smooth posterior margin of the gill flap, uniserial dentary teeth, random arrangement of body scales, no subopercular spine, an intervention of the pterospheonoid (=alisphenoid) between the frontal and the parasphenoid, and the first and second haemal spines depressed on the centra. A new genus, *Selenoscopus*, is therefore proposed, based on these characters.

During intensive research of unexploited fishery resources on continental slopes around Japan, conducted by the Fisheries Agency of the Japanese Government for three years following 1977, the senior author and other researchers collected 23 specimens of an undescribed uranoscopid from the Kita-Koho and Minami-Koho Seamounts, Kyushu-Palau Ridge. Okamura (1982) described this species as *Uranoscopus* sp., noting its many unique characters, including a smooth gill flap, uniserial teeth on the lower jaw and palatine, and body scales not arranged in regular oblique series. He subsequently presented osteological features of the species at the annual meeting of the Ichthyological Society of Japan in 1983 and redescribed it in 1988.

In the course of a revisional study of the uranoscopid fishes, the junior author received seven specimens of the species, four from Wanganella Bank and Norfolk Island, northern Tasman Sea, and three from off Kii Peninsula, Japan. The following description is based on a combination of all 30 specimens.

Material and Methods

Material is deposited in the following institutions: BSKU: Department of Biology, Faculty of Science, Kochi University; FAKU: Faculty of Agriculture, Kyoto University; FSFL: Far Seas Fisheries Research Laboratory; FUMT: Department of Fisheries,

University Museum, University of Tokyo; HUMZ: Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University; IORD: Institute of Oceanic Research and Development, Tokai University; NMNZ: National Museum of New Zealand; NSMT: National Science Museum, Tokyo; SABL: Seto Marine Biological Station, Kyoto University.

Measurements, counts, and terminology follow Hubbs and Lagler (1970), Kishimoto (1984, 1987) and Pietsch (1989). The osteological description is based on the dissection of one paratype (BSKU 30740) and radiographs of the holotype and seven paratypes.

Selenoscopus gen. nov.

(New Japanese name: Kasurimishima-zoku)

Type species. *Selenoscopus turbisquamatus* sp. nov.

Diagnosis. Teeth on lower jaw uniserial. Dentary without a ventromedial flange. Subopercle lacking hooked spine ventrally. Posterior margin of gill flap smooth except for fimbriation on its uppermost portion. Body scales randomly arranged. Spinous dorsal fin present, its spines feeble. Lateral line lying just beneath insertion of soft dorsal fin. Cleithral spine extremely well developed, extending posteriorly to below spinous dorsal fin. Pterospheonoid situated between frontal and parasphenoid. First and second

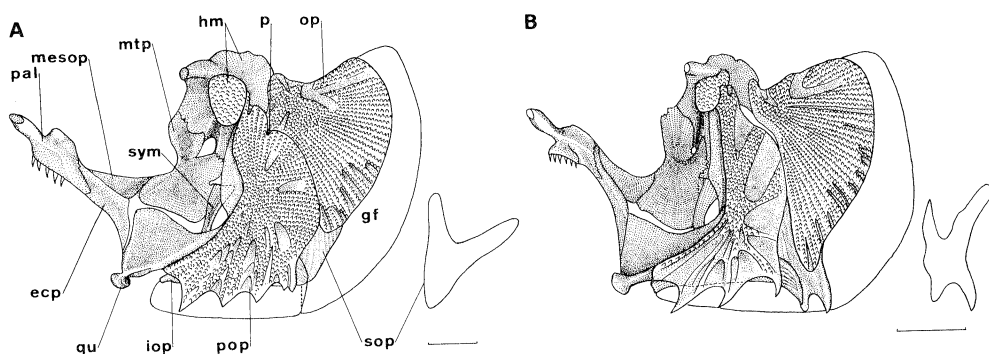


Fig. 1. Suspensoria and opercular apparatus, and lateral views of subopercle of *Selenoscopus turbisquamatus*, gen. et sp. nov., BSKU 30740, paratype, 270 mm SL (A), and *Uranoscopus japonicus*, BSKU 49733, 215 mm SL (B). ecp, ectopterygoid; mesop, mesopterygoid; gf, cartilage-like gill flap; hm, hyomandibula; iop, interopercle; mtp, metapterygoid; op, opercle; p, upper second pore; pal, palatine; pop, preopercle; qu, quadrate; sop, subopercle; sym, symplectic. Scale bars indicate 10 mm.

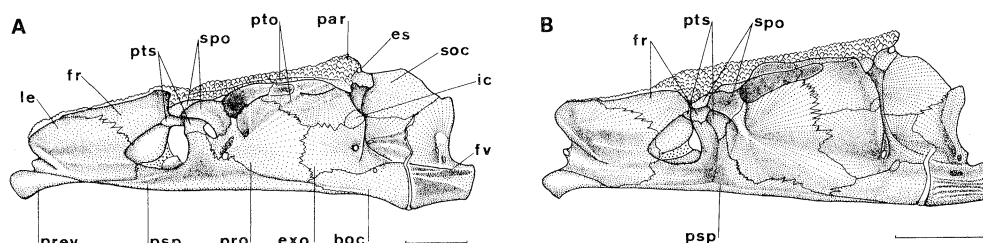


Fig. 2. Neurocrania of *Selenoscopus turbisquamatus*, gen. et sp. nov., BSKU 30740, paratype, 270 mm SL (A), and *Uranoscopus japonicus*, BSKU 49733, 215 mm SL (B). boc, basioccipital; es, extrascapular; exo, exoccipital; fr, frontal; fv, first vertebra; ic, intercalar; le, lateral ethmoid; par, parietal; prev, prevomer; pro, prootic; psp, parasphenoid; pto, pterotic; pts, pterosphenoid; soc, supraoccipital; spo, sphenotic. Scale bars indicate 10 mm.

haemal spines depressed on centra.

Description. Head broad, depressed, flattened dorsally, its dorsal and lateral surfaces almost entirely encased in minutely sculptured bones. Posterior-most dorsal fin spine usually embedded under skin. Second dorsal and anal fins with long bases. Pectoral fin broad. Pelvic fins close together, situated on isthmus, each consisting of one short, feeble spine and five segmented rays, pelvic spine closely connected to first segmented ray by tendon. Membranes of anal and paired fins fleshy, thickened.

Body with thin, cycloid scales not arranged in regular series. Breast and belly naked. Tubiform scales entirely embedded along each lateral line. Lateral line on each side positioned dorsally close to soft dorsal fin base, the anterior end covered by supra-cleithrum, abruptly descending on caudal peduncle, and extending nearly to tips of central two caudal

rays. Eyes moderately large, located on top of head, widely separated, slightly telescopic. Interorbital fossa moderately long, U-shaped. Nasal bone entirely embedded under skin. Anterior nostril with small tubiform valve, with or without additional short, branching, fleshy flap; posterior nostril slit-like. Labial fimbriae less developed on upper jaw. At least in juvenile stages, a retractile filament emerging from middle of respiratory valve inside lower jaw. Prevomer, palatine, premaxilla, and anterior part of dentary with conical teeth, posterior part of dentary with caniniform teeth. Pseudobranchiae present. Gill membranes united by connecting fold, free from isthmus.

Osteology. Infraorbitals expanded ventrally; lacrimal elongated posteroventrally, with three spines on its anteroventral margin, though sometimes ventralmost spine rudimentary. Opercular apparatus

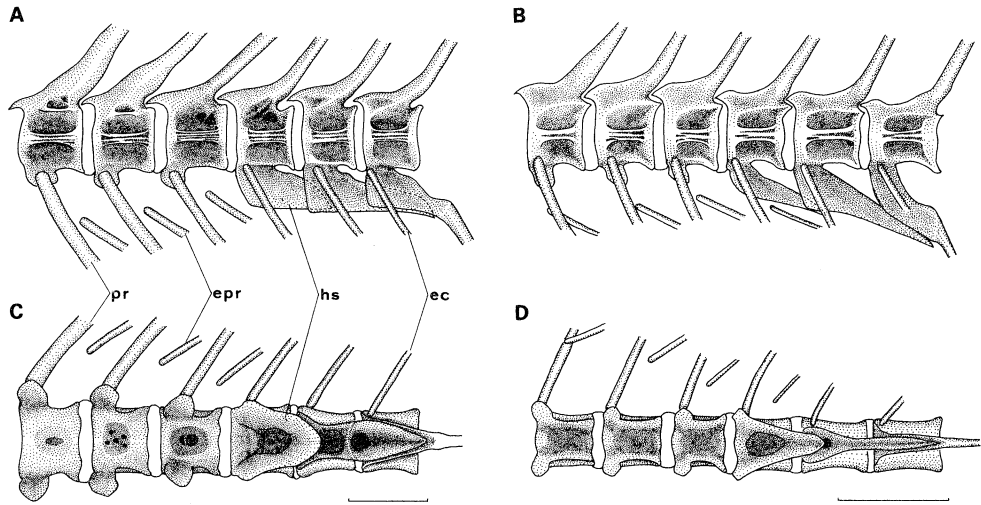


Fig. 3. Lateral views (A, B) and ventral views (C, D) of 9th to 14th vertebral centra of *Selenoscopus turbisquamatus*, gen. et sp. nov., BSKU 30740, paratype, 270 mm SL (A, C), and *Uranoscopus japonicus*, BSKU 49733, 215 mm SL (B, D). ec, epicentrum; epr, epipleural rib; hs, haemal spine; pr, pleural rib. Scale bars indicate 10 mm.

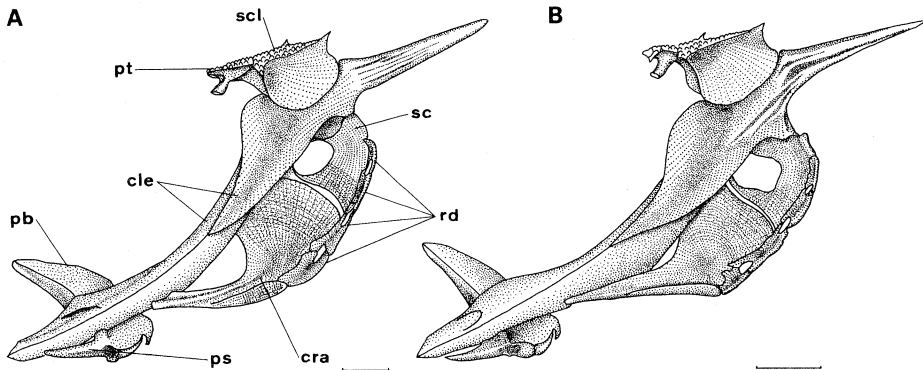


Fig. 4. Pectoral girdles of *Selenoscopus turbisquamatus*, gen. et sp. nov., BSKU 30740, paratype, 270 mm SL (A), and *Uranoscopus japonicus*, BSKU 49733, 215 mm SL (B). cle, cleithrum; cra, coracoid; pb, pelvic bone; ps, pelvic spur (=basipterygial process); pt, posttemporal; rd, radials; sc, scapula; scl, supracleithrum. Scale bars indicate 10 mm.

well ossified; posterior and lower margins of opercular apparatus encircled by broad, cartilage-like flaps emerging from subopercle and interopercle, respectively. Lateral surfaces of preopercle and opercle highly sculptured and pitted. Preopercle large, posteriorly expanded; openings of cephalic portion of acoustico-lateralis system of preopercle less developed, second dorsalmost opening very small (Fig. 1); ventral margin of preopercle forming a series of four to six spine-like processes. V-shaped subopercle considerably reduced, lacking sharp, hooked spine. Bran-

chiostegal rays six. Pterosphonoid comparatively large, not excluded medially, intervening between frontal and ascending portion of parasphenoid (Fig. 2). Two extrascapular elements (=supratemporals) on each side of posterior margin of cranium. First dorsal pterygiophore inserted between third and fourth neural spines. First and second haemal spines not spiniform, broad in ventral view, depressed on centra in lateral view, the second perforated by two pores (Fig. 3). First anal pterygiophore supporting two soft rays. Vertebrae $11 + 14 = 25$. Both pleural

ribs and epicentrals nine. Epipleural ribs 10. Postcleithrum absent. Supracleithral spines two. Fenestra between cleithrum and coracoid large, semicircular (Fig. 4). Pelvic spur (=basipterygial process; Kishimoto, 1984) long, stout, externally visible, and closely associated with spine-like distal tip of cleithrum (=cleithral process; Kishimoto, 1984).

Etymology. The generic name is a combination of the Greek *selene*, meaning "moon," and *skopos*, meaning "gazer," and refers to the arrangement of the eyes.

Remarks. The present new form is related to the genus *Uranoscopus*, as defined by Pietsch (1989), in having a small fourth infraorbital, only two extrascapular elements, L-shaped toothplate associated with the ventral margin of the first epibranchial, ventral margin of preopercle forming a series of spine-like processes, two dorsal fins, spinous dorsal fin consisting of feeble spines, and in lacking a postcleithrum. It differs from *Uranoscopus*, however, in having such characters as a single row of teeth on dentary, body scales not arranged in regular oblique series, intervention of pterospheonoid between frontal and parasphenoid, no hooked subopercular spine, smooth posterior margin of gill flap, first and second haemal spines depressed on centra, and in lacking a venom gland associated with the cleithral spine.

Moreover, this new form is separable from *Gnathagnus*, *Kathetostoma*, and *Genyagnus* in having a spinous dorsal fin, from *Pleuroscopus* in having eyes on the top of the head, and from *Ichthyoscopus* and *Astroscopus* in having a cleithral spine extremely well developed and distal tips of the pelvic spurs and cleithra closely associated, forming two pairs of spines on the throat.

These differences are sufficient for recognition of a new genus and species.

Selenoscopus turbisquamatus sp. nov.

(Japanese name: Kasuri-mishima)

(Fig. 5)

Uranoscopus sp. Okamura, 1982: 259, 387, pl. 176 (Kyushu-Palau Ridge); Okamura, 1988: 446, 456, pl. 376-A, B (Kyushu-Palau Ridge); Kishimoto, 1990: 300 (Norfolk Ridge, Wanganella Bank); Tanase and Kishimoto, 1991: 37, fig. 1 (Kii Peninsula, central Japan).

Holotype. BSKU 29458, 283 mm SL, 26°11.05'N, 135°45.04'E, Minami-Koho Seamount, Kyushu-Palau Ridge, 355–375 m, 16 December 1979, otter trawl.

Paratypes (29 specimens). Kyushu-Palau Ridge:

BSKU 26245, 175 mm SL, 26°13.05'N, 135°46.00'E, Minami-Koho Seamount, 360 m, 11 February 1978; BSKU 28958, 259 mm SL, 26°12.40'N, 135°46.19'E, Minami-Koho Seamount, 510 m, 19 November 1978; BSKU 29303, 29439, 128 and 281 mm SL, data same as holotype; BSKU 30738–30740 (30740 dissected for osteology), 189–270 mm SL, 26°05.01'N, 135°50.05'E, Minami-Koho Seamount, 360–370 m, 16 December 1979; BSKU 30884, 161 mm SL, data same as holotype; FAKU 112711, 112712, 169–173 mm SL, 26°46.00'N, 135°21.00'E, Kita-Koho Seamount, 330–375 m, 19 January 1980; FUMT-P 1907, 240 mm SL, 26°07.02'N, 135°47.09'E, Minami-Koho Seamount, depth unrecorded, 20 January 1980; FUMT-P 21195, 21197, 192–239 mm SL, 26°05.02'N, 135°49.05'E, Minami-Koho Seamount, 360–380 m, 28 November 1979; FUMT-P 21193, 21196, 21198, 163–235 mm SL, 26°45.09'N, 135°21.00'E, Kita-Koho Seamount, 360 m, 25 November 1979; FUMT-P 21194, 192 mm SL, 26°45.06'N, 135°21.08'E, Kita-Koho Seamount, 330 m, 26 November 1979; HUMZ 75212, 247 mm SL, 26°13.09'N, 135°47.02'E, Minami-Koho Seamount, 360 m, 25 January 1978; HUMZ 75213, 224 mm SL, 26°14.01'N, 135°47.05'E, Minami-Koho Seamount, 360 m, 23 January 1978; HUMZ 75214, 157 mm SL, 26°14.01'N, 135°46.07'E, Minami-Koho Seamount, 360 m, 23 January 1978; HUMZ 80248, 255 mm SL, 26°05.01'N, 135°49.04'E, Minami-Koho Seamount, 360 m, 20 November 1978; HUMZ 80388, 106 mm SL, 26°46.01'N, 135°21.06'E, Kita-Koho Seamount, 330–350 m, 18 November 1978.

Central Japan: IORD 85-13, 281 mm SL, off Shirahama-cho, Wakayama Prefecture, 130 m, 5 April 1985; IORD 87-29, 291 mm SL, off Shirahama-cho, Wakayama Prefecture, 120 m, 16 April 1987; SABL F-86011, 257 mm SL, off Minabe-cho Wakayama Prefecture, 100 m, 2 March 1986.

Norfolk Ridge, northern Tasman Sea: NSMT-P 34736 (orig. no. FSFL EC-154), 250 mm SL, 29°35.00'S, 168°05.08'E, Norfolk Island, 308 m, 17 January 1976; NSMT-P 34735 (orig. no. FSFL EE-571), 263 mm SL, 32°32.02'S, 167°31.06'E, Wanganella Bank, 110–117 m, 22 December 1976; NSMT-P 43439, 245 mm SL, 32°42.00'S, 167°30.00'E, Wanganella Bank, 144–215 m, 20 December 1983; NMNZ-P 27134 (orig. no. FSFL EE-573), 231 mm SL, 32°32.02'S, 167°31.06'E, Wanganella Bank, 110–117 m, 22 December 1976.

Diagnosis. See generic diagnosis.

Description (supplementary paratype data given in parentheses). Dorsal fin V-13 (IV-14 in two, V-14 in two); anal fin rays 13 (14 in three); pectoral fin rays 21 (22 in 13, 20 on right side only of two); pelvic fin rays I, 5. Branched caudal fin rays 5+5. Proportional dimensions are shown in Table 1.

Externally apparent head bones concave along middorsal line, sculptured with minute tubercles ar-

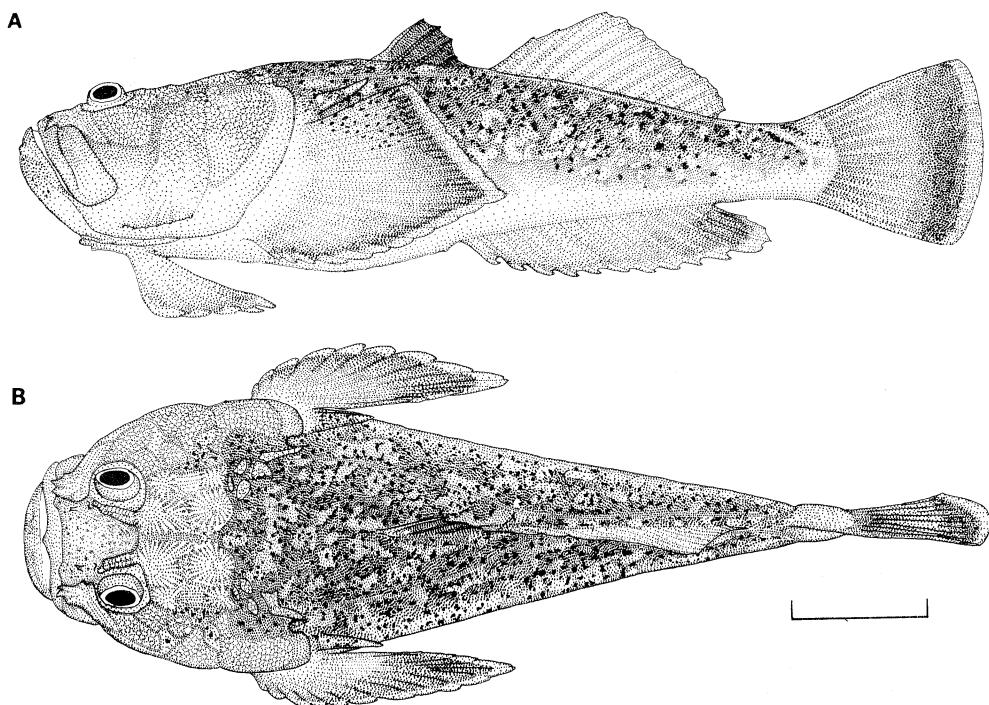


Fig. 5. *Selenoscopus turbisquamatus*, gen. et sp. nov., BSKU 29458, holotype, 280 mm SL. A, lateral view; B, dorsal view. Scale bar indicates 50 mm.

ranged on divergent ridges, sutures marked by rather deep channels. Two occipital lobes developed. Interorbital fossa somewhat wider anteriorly, extending to a line joining posterior margins of eyes (varying between posterior margins of corneas and orbits in paratypes). Supraocular tentacle present on right side, but absent on left side (almost always present in paratypes smaller than 200 mm SL, often rudimentary in larger ones). Anterior nostril with small tubiform valve, additional short branching filament on its posterior margin (filament absent in some paratypes). Posterior nostril with short tubiform valve (varying from slit-like to low tubiform in paratypes), without additional filament. Simple labial fimbriae rather distinct, 13 (8–20 in paratypes) on lower lip, but indistinct, 4 (0–15) on upper lip. Respiratory valve without retractile filament (present in two smallest paratypes, 106 mm and 128 mm SL, rudimentary in the former and ca. 20 mm long in the latter). Premaxillary teeth conical, triserial anteriorly (biserial in smaller paratypes), larger in outermost series, tapering into a single row posteriorly. Dentary teeth uniserial, anterior teeth conical, posterior two (or three in some paratypes) widely spaced and canini-

form. Prevomerine teeth conical, much smaller than those on jaws, set in broad band on each side of the bone, both tooth patches widely separated. Palatine with a single row of several conical teeth.

Posterior margin of gill flap lacking dermal fringe and serrations. No cirri on branchiostegal membrane. Preopercle with five spines on ventral margin on left and four on right (four to six in paratypes). Supracleithrum with two spines, anterior one directed posteromedially (direction varying in paratypes), posterior spine directed almost posteriorly (sometimes medially in paratypes); distance between apices of posterior supracleithral spines 2.6 in head (2.6–3.1 in paratypes). Cleithral spine stout and long, 3.3 in head (2.5–3.2 in paratypes).

Rudimentary fifth spine of dorsal fin hidden by skin (also fourth in some paratypes). Anteriormost three rays of soft dorsal fin segmented and unbranched. Posterodorsal margin of pectoral fin truncate and very steep, the upper angle blunt, middle ray longest. Caudal fin truncate. Pelvic spurs (=basipterygial processes) prominent, widely separated. Dorsal pterygiophores 18, anal pterygiophores 12. Body scales small, cycloid, oval, arranged randomly,

not forming regular oblique rows. Nape and dorsum encircled by lateral lines, completely naked.

Color in fresh specimens: Body brownish, paler below. Upper half of body with many yellowish-white blotches, irregular and blurred in shape, usually smaller than orbit. Spinous dorsal fin uniformly jet-black, except brownish first spine. Pectoral, second dorsal, and anal fins reddish-brown. Caudal fin and posterior basal part of anal fin dark olive. Pelvic fin pale pink.

Color in preserved specimens: Body uniformly brown or pale brown. Upper half of body with many whitish blotches. Spinous dorsal fin brownish-black, except brown first spine. Other fins brown or dark

brown. Underside of head and body white.

Etymology. The specific epithet is a combination of the Latin *turba*, meaning "disarrangement," and *squama*, meaning "scale," and refers to the random arrangement of body scales.

Distribution. Occurs from off the Kii Peninsula, Pacific coast of central Japan, at depths of 100–130 m, the Kyushu-Palau Ridge, at 330–510 m, and the Norfolk Ridge, northern Tasman Sea, at 110–308 m.

Remarks. This species is easily distinguished from all other members of the family Uranoscopidae by the characters described in the generic diagnosis.

Almost all specimens examined had no protractile

Table 1. Proportional measurements of *Selenoscopus turbisquamatus* gen. et sp. nov.

	Holotype Japan	Paratypes Japan	Paratypes Norfolk R.
Number of specimens	1	25	4
Standard length (mm)	283	106–291	231–263
% of standard length:			
Total length	126	125–133	130–132
Body depth	26.8	20.7–29.1	22.0–25.4
Head length	36.3	36.2–39.5	36.9–39.4
Head width	35.0	32.3–39.7	31.8–35.9
Snout tip to gill opening	31.2	29.8–33.0	30.8–32.5
Predorsal length	42.1	39.4–43.0	40.7–41.9
1st dorsal fin base	15.5	11.8–17.7	13.9–15.9
2nd dorsal fin base	29.3	30.3–36.2	31.4–33.5
Pectoral fin base	15.1	15.3–16.9	15.2–16.3
Anal fin base	32.7	30.6–37.8	34.2–35.9
Longest dorsal ray	15.2	15.2–20.6	16.9–19.8
Longest anal ray	14.6	13.1–16.4	13.8–16.5
Pectoral fin length	28.1	24.5–29.9	26.4–27.6
Pelvic fin length	19.4	18.4–23.7	21.4–23.8
Caudal fin length	24.9	22.7–28.5	25.1–29.9
% of head length:			
Head width	96.2	84.9–105	86.4–93.8
Dist. between upper gill openings	60.5	52.5–61.7	56.2–61.4
Postorbital length of head	61.8	60.1–63.8	60.1–62.8
Snout length	21.6	19.2–22.5	20.1–22.1
Interorbital width	21.4	19.6–23.3	19.5–22.4
Interorbital fossa length	32.5	27.2–32.1	29.8–32.1
Interorbital fossa width	14.1	11.0–15.4	11.8–13.6
Greatest infraorbital depth	21.6	21.6–24.2	21.7–22.9
Least infraorbital depth	7.5	6.9– 9.8	7.9– 8.5
Orbit diameter	20.6	18.5–22.0	18.7–21.4
Upper jaw length	48.2	45.1–48.7	47.1–50.2
Caudal peduncle depth	27.0	24.9–30.0	28.2–29.2
Cleithral spine length	30.9	23.6–40.1	28.0–34.2
Pelvic spur length	14.4	13.5–18.1	15.0–17.1
Dist. between pelvic spurs	18.4	11.8–21.0	13.8–17.2
Opercular height	39.4	34.9–42.9	36.6–42.6
Opercular width	23.8	22.0–26.6	20.6–24.6

filament on the respiratory valve inside the lower jaw, but the two smallest specimens, slightly larger than 100mm SL, had a rudimentary or well-developed filament in the same plane with the respiratory valve. It is expected, therefore, that smaller specimens usually have such a filament.

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日本およびノーフォーク海嶺から得られたミシマオコゼ科の1新属新種カスリミシマ

岡村 収・岸本浩和

紀伊半島沿岸、九州-パラオ海嶺およびタスマン海から得られた30個体のミシマオコゼ科魚類に基づき、新属新種 *Selenoscopus turbisquamatus* を記載した。本種は従来 *Uranoscopus* sp. カスリミシマとして取扱われていた種である。

本種は柔軟な棘条からなる第1背鰭をもつこと、前鰓蓋骨下縁に4-6本の鋭い棘条突起があること、上擬鎖骨に2本の棘を備えること、擬鎖骨棘が強大であること、後擬鎖骨がないこと、少なくとも幼期には下顎呼吸弁に1皮弁があることなど、ミシマオコゼ属の種と共通する形質をもつ。いっぽう、本種は鰓蓋弁の後縁が円滑で総状でないこと、下顎歯が1列であること、下鰓蓋骨下部に鉤状棘がないこと、体鱗が規則的な列を形成しないこと、翼蝶形骨が内方に排除されず前頭骨下降部と副蝶形骨上向部との間に介在していること、第1および第2血管棘が縦偏し、第2血管棘に2孔があること、擬鎖骨-烏口骨間大孔が半月形で極めて大きいことなどによりミシマオコゼ属から明瞭に区別され、また同時に本科のすべての他属から識別できる。

(岡村: 780 高知市曙町2-5-1 高知大学理学部生物学科; 岸本: 424 清水市折戸3-20-1 東海大学海洋研究所)